

# The Cryogenic Evaluation of Irradiated Composite Materials for Use in Composite Pressure Vessels, Phase I

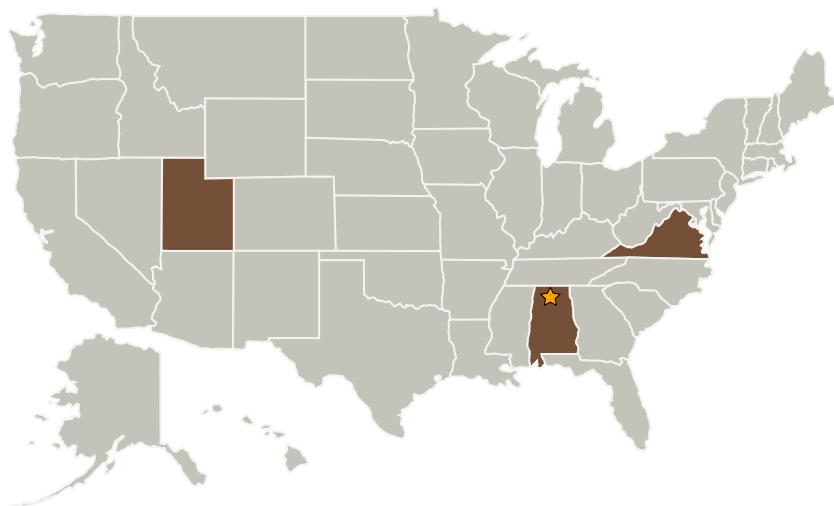
Completed Technology Project (2005 - 2006)



## Project Introduction

The intent of this proposal is to develop key building block technology for lightweight composite structures suitable for cryogenic fuel depot storage as well as human in-space habitat. The effort will incorporate and expand on previous work by the participants in the cryogenic performance of composite materials as well as improved impact technologies for micro-meteor/space debris survivability. It will then develop radiation resistant capabilities. In order to develop reliable composite structures for use as cryogenic fuel storage, human habitation, or other mission critical application a solid understanding of constituent material environmental capabilities is required. While good progress has been made in expanding the knowledge of how composite fibers and matrix systems (resins) react to loads and strains at extremely cold temperatures little to no effort has been made to incorporate radiation exposure such as would be encountered with in-space fuel storage depots. With a view to developing dual-use lightweight composite structures the proposed effort will develop improved composite material resistance to the harsh radiation environment a spacecraft would be expected to encounter during the life of its mission. Our intent is to develop robust light weight composite structures which are cryogenic capable as well as impact and radiation resistant.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Marshall Space Flight Center (MSFC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
HyPerComp Engineering, Inc.	Supporting Organization	Industry	Brigham City, Utah

Primary U.S. Work Locations	
Alabama	Utah
Virginia	

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigators:**

Steve Savoy

James P Patterson

## Technology Areas

**Primary:**

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.1 Optical Communications
    - └ TX05.1.7 Innovative Signal Modulations